

AGENDA: March 9, 2010

7.2

CATEGORY: New Business

DEPT.: Public Works

TITLE: Adopt Government Operations
Greenhouse Gas Inventory and Emissions
Reduction Targets

RECOMMENDATION

Approve the Council Environmental Sustainability Committee (CESC) recommendation to adopt the following government operations greenhouse gas (GHG) emissions reduction targets:

- 15 percent below 2005 levels by 2010;
- 20 percent below 2005 levels by 2015;
- 25 percent below 2005 levels by 2020; and
- 80 percent below 2005 levels by 2050.

FISCAL IMPACT

Setting GHG reduction targets has no fiscal impact. There will be future costs as the Council chooses specific emissions-reduction strategies to meet these targets. In some cases, these costs may be offset by savings. Staff will conduct financial analyses for specific strategies identified by the City Council.

BACKGROUND AND ANALYSIS

During 2008 and 2009, the City conducted inventories of its 2005 *community-wide* and *government operations* GHG emissions which will serve as the baseline against which to measure emissions reduction progress in future years. Conducting an inventory involves measuring the amount of energy, fuel and water used and the amount of waste generated during the course of community activities and government operations. The amount of greenhouse gases (CO₂e¹) resulting from the activities are then calculated. The inventories were conducted in conjunction with ICLEI—Local Governments for Sustainability which specializes in climate change and GHG inventories for cities and counties.

¹ CO₂e, or CO₂ equivalent, describes how much global warming a given type and amount of greenhouse gas (e.g., water vapor, carbon dioxide, methane, nitrous oxide, ozone) may cause, using the functionally equivalent amount or concentration of carbon dioxide (CO₂) as the reference.

The inventory for 2005 government operations emissions estimates that 18,349 metric tons of CO₂e were produced by City operations. The top four sector and source emissions are shown below.

Sector	Source
• Landfill (52 percent)	• Solid Waste (54 percent)
• Buildings and Facilities (15 percent)	• Gasoline (21 percent)
• Employee Commute (15 percent)	• Electricity (15 percent)
• Vehicle Fleet (9 percent)	• Natural Gas (6 percent)

Setting GHG Emissions Reduction Targets

On November 3, 2009, the City Council approved *community-wide* GHG reduction targets. Since *government operations* emissions are a subset of community-wide emissions (about 2.4 percent), the rationale and benefits of setting government operations GHG reduction targets and reducing emissions on a voluntary basis are similar to those for setting community-wide emissions reductions targets. They include:

- Saving operational expenses through increased energy and water efficiency.
- Providing community health benefits such as improved air quality.
- Setting an example for the community.
- Enabling the City to gain experience with emissions reduction activities before reductions likely become mandatory at the State or Federal level.
- Demonstrating the City's leadership in environmental protection and a commitment to future generations.
- Potentially reducing the impacts of climate change on residents, businesses and the environment.

The CESC met on November 5, 2009 and approved the following voluntary *government operations* GHG reduction targets (see Attachment 1—CESC Staff Report):

- 15 percent below 2005 levels by 2010;
- 20 percent below 2005 levels by 2015;

- 25 percent below 2005 levels by 2020; and
- 80 percent below 2005 levels by 2050.

To put the recommended targets in perspective, total government operations GHG emissions have declined approximately 12 percent from 2006 through 2008 due to decreasing landfill emissions. Therefore, with two additional years of decreasing landfill emissions (2009-2010) and numerous energy-efficiency projects that will have been completed between 2006 and the end of 2010, the proposed 2010 reduction target of 15 percent (below 2005 levels) appears easily achievable as our first goal.

CESC Comments

Comments from the CESC included the following key items, with full minutes shown in Attachment 2.

- There was an interest in using the City's limited funds on projects that will provide the biggest emissions reductions. With only 2.4 percent of the community's overall emissions coming from government operations, the City may want to allocate more resources to community-based projects.
- The CESC wanted to see a list of major City projects since the end of 2005 that have reduced energy or water use and, thus, greenhouse gas emissions such as replacing the Civic Center air chiller with a high-efficiency model. That information is provided in Attachment 3.
- Government operations targets may need to be modified in the future, given that:
(a) 52 percent of emissions come from the landfill and their rate of decline (due to natural decreasing decomposition) is outside the City's control; and (b) 15 percent of emissions comes from employee commuting, over which the City has limited control.

NEXT STEPS

The City is implementing or planning various GHG-reducing government operations actions approved in the Environmental Sustainability Action Plan (ESAP) and proposed in the Federal Energy Efficiency and Conservation Block Grant application. These actions include:

- Completing the "greening" of the Mountain View Public Library and identifying the next City building to undergo a comprehensive/focused effort to reduce energy use and GHG emissions.

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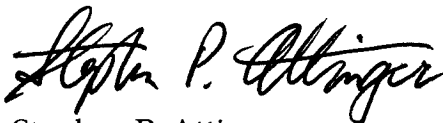
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- Installing high-efficiency lighting at the Cuesta Park tennis courts.
- Replacing the aging Shoreline landfill microturbines so they can continue to power the on-site facilities.
- Evaluating the feasibility of implementing one or more large, municipal solar photovoltaic (PV) projects.
- Investigating installing PV panels on several City buildings through a regional power purchase agreement program.

The City plans to conduct its next GHG inventory, starting in 2011, to assess its progress against the 2010 reduction goal.

PUBLIC NOTICING—Agenda posting.

Prepared by:



Stephen P. Attinger
Environmental Sustainability Coordinator

Approved by:



Michael A. Fuller
Interim Public Works Director

Reviewed by:



Joan Jenkins
Transportation and Policy Manager



Kevin C. Duggan
City Manager

SPA/8/CAM
916-03-09-10M-E^

- Attachments:
1. Memo from November 5, 2009 CESC Meeting
 2. Draft Excerpt Minutes from November 5, 2009 CESC Meeting
 3. List of Major City Greenhouse Gas-Reducing Projects Since 2005

**CITY OF MOUNTAIN VIEW
MEMORANDUM**

DATE: November 5, 2009

TO: Council Environmental Sustainability Committee

FROM: Stephen P. Attinger, Environmental Sustainability Coordinator

SUBJECT: GOVERNMENT OPERATIONS GREENHOUSE GAS INVENTORY AND
EMISSIONS REDUCTION TARGETS

RECOMMENDATION

Recommend the City Council adopt the following government operations greenhouse gas (GHG) emission reduction targets:

- 15 percent below 2005 levels by 2010;
- 20 percent below 2005 levels by 2015;
- 25 percent below 2005 levels by 2020; and
- 80 percent below 2005 levels by 2050.

FISCAL IMPACT

Setting GHG reduction targets has no fiscal impact. There will be future costs as the Council chooses specific emissions reduction strategies to meet these targets; however, in some instances, these costs may be offset by savings. Staff will conduct financial analyses for specific strategies identified by the City Council.

BACKGROUND

In response to climate change, the State of California passed AB 32 (Global Warming Solutions Act of 2006), requiring California to reduce State-wide GHG emissions over time. The law requires reductions from the heaviest GHG-emitting industries first, such as cement manufacturers and utilities.

Community-wide GHG Emissions Reduction Targets

In a Study Session on October 30, 2007, the City Council endorsed a sustainability goal of meeting or exceeding California's AB 32 requirements for emissions reduction. In addition, the Council sought public input through its Environmental Sustainability Task Force which, after seven months of work, recommended specific community-wide reduction targets as outlined later in this report.

The CESC met on October 7, 2009 and, following public input and discussion, recommended the following community-wide GHG reduction targets, which the Council will consider adopting on November 3, 2009:

- 5 percent below 2005 levels by 2012;
- 10 percent below 2005 levels by 2015;
- 15 percent to 20 percent below 2005 levels by 2020; and
- 80 percent below 2005 levels by 2050.

ANALYSIS

Since government operations emissions are a subset of community-wide emissions, the rationale and benefits of setting government operations GHG reduction targets and reducing emissions on a voluntary basis are similar to those for setting community-wide emissions reductions targets. They include:

- Saving operational expenses through increased energy and water efficiency.
- Setting an example for the community.
- Enabling the City to gain experience with emissions reduction activities before reductions likely become mandatory at the State or Federal level.
- Demonstrating the City's leadership in environmental protection and a commitment to future generations.
- Potentially reducing the impacts of climate change (e.g., extreme weather) on residents, businesses and the environment.
- Providing community health benefits such as improved air quality.

Government Operations Greenhouse Gas Inventory

The City completed an inventory of its 2005 government operations GHG emissions that will serve as the baseline against which to measure emissions reduction progress in future years. Conducting an inventory involves measuring the amount of energy/fuel/water used and waste generated during the course of government operations and calculating the number of metric tons of greenhouse gases (CO₂e¹) that result from those activities.

GHG Inventory Methodology

The inventory was conducted in conjunction with ICLEI—Local Governments for Sustainability, which specializes in climate change and GHG inventories for cities and counties. It is one of the first inventories to use a new national standard developed and adopted by the California Air Resources Board (CARB) in conjunction with ICLEI, the California Climate Action Registry² and The Climate Registry³. This standard, called the Local Government Operations Protocol (LGOP), provides standard accounting principles, boundaries, quantification methods and procedures for reporting greenhouse gas emissions from local government operations. To that end, LGOP represents a strong step forward in standardizing how inventories are conducted and reported, providing a common national framework for all local governments to establish their emissions baseline.

This and all emissions inventories represent an estimate of emissions using the best available data and calculation methodologies. Emissions estimates are subject to change as better data and calculation methodologies become available in the future. Regardless, the findings of this inventory analysis provide a solid base on which Mountain View can begin planning and taking action to reduce its greenhouse gas emissions.

¹ CO₂e, or CO₂ equivalent, describes how much global warming a given type and amount of greenhouse gas (e.g., carbon dioxide, methane, nitrous oxide, ozone) may cause, using the functionally equivalent amount or concentration of carbon dioxide (CO₂) as the reference.

² The California Climate Action Registry provides leadership on climate change by developing and promoting credible, accurate and consistent GHG reporting standards and tools for organizations to measure, monitor, third-party verify and reduce their GHG emissions consistently across industry sectors and geographical borders.

³ The Climate Registry is a nonprofit collaboration among North American states, provinces, territories and Native Sovereign Nations that sets consistent and transparent standards to calculate, verify and publicly report greenhouse gas emissions into a single registry.

Deriving the Inventory Numbers

The government operations GHG emissions data was derived in a four-step process:

1. ICLEI provided detailed instructions and tools to help the City compile data on its 2005 operations.
2. The City provided ICLEI with 2005 data from the following source areas: electricity, natural gas, gasoline, diesel, biodiesel, refrigerants and solid waste. See Exhibit 2 below.
3. The City conducted an employee commute survey, the results of which were forwarded to ICLEI for analysis.
4. Based on the State-approved LGOP, ICLEI analyzed the City's data and calculated the resulting GHG emissions.

Like almost all cities, Mountain View was not able to provide complete data in a few, small areas. Additional data-tracking measures are being evaluated for use in future inventories.

GHG Inventory Results

The total 2005 government operations emissions, 18,349 metric tons of CO₂e, were broken down by sector and by source; see Exhibits 1 and 2 below. To put one metric ton of CO₂ in perspective, it would fill a cube 27' x 27' x 27'.

Sector

- Landfill (52 percent)
- Buildings and Facilities (15 percent)
- Employee Commute (15 percent)
- Vehicle Fleet (9 percent)
- Public Lighting (3 percent)
- Water/Sewage Transport (3 percent)
- Government-Generated Solid Waste (3 percent)

Source

- Solid Waste (54 percent)
- Gasoline (21 percent)
- Electricity (15 percent)
- Natural Gas (6 percent)
- Diesel (3 percent)
- Refrigerants (1 percent)
- Biodiesel (0.0002 percent)

The Landfill and Solid Waste numbers are high for two reasons: (1) they represent both waste in the Shoreline landfill and waste thrown out as part of the City's operations, with the latter contributing only a very small percentage; and (2) in spite of the Shoreline landfill being 93.7 percent efficient in capturing gas, the landfill gas in highest proportion by volume (methane) is 72 times more damaging than CO₂ over 20 years and 25 times more damaging than CO₂ over 100 years. Thus, small quantities of leaking methane have a disproportionately high effect on GHG emissions.

Exhibit 1—2005 Government Operations Greenhouse Gas Emissions by SECTOR

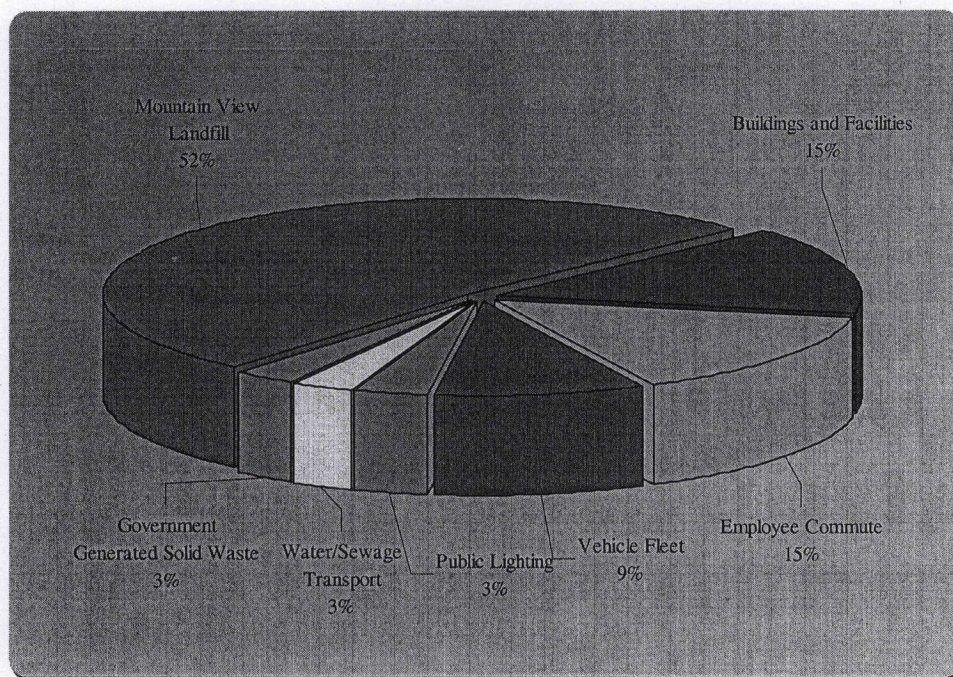
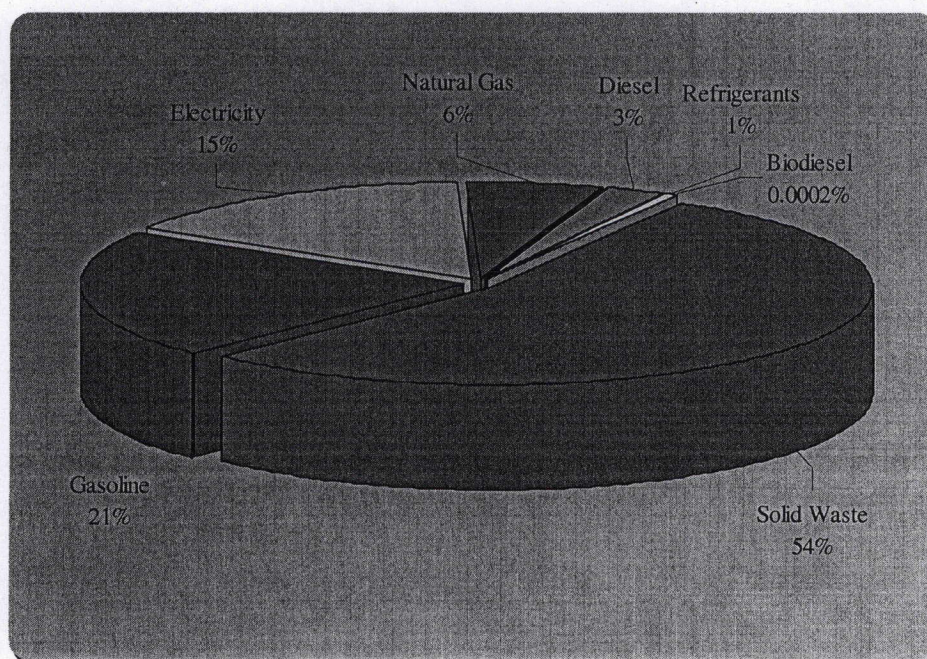


Exhibit 2—2005 Government Operations Greenhouse Gas Emissions by SOURCE



Proposed GHG Reduction Targets

Table 1 below shows the recommended short- and long-term emissions reduction targets for government operations, which will serve as a "roadmap" for achieving emission reductions over time. Earlier targets are slightly more aggressive than later ones, since earlier emissions reductions are easier and less expensive to attain.

Table 1—Recommended Government Operations Greenhouse Gas Reduction Targets

<u>Target Year</u>	<u>Proposed Reductions</u> <u>(below 2005 levels)</u>
2010	15% (2,752 metric tons CO ₂ e)
2015	20% (3,670 metric tons CO ₂ e)
2020	25% (4,587 metric tons CO ₂ e)
2050	80% (14,679 metric tons CO ₂ e)

To put these targets in perspective, total government operations GHG emissions have already declined approximately 12 percent from 2005 through 2008 due to decreasing landfill emissions. Therefore, considering two additional years of decreasing landfill emissions (2009-2010) and numerous energy efficiency projects that will have been completed between 2005 and the end of 2010, the proposed 2010 reduction target of 15 percent (below 2005 levels) appears easily achievable as our first goal.

Setting GHG reduction targets is currently voluntary; however, the California Air Resources Board anticipates mandatory emissions reductions will eventually apply to all sectors. The City's targets can be modified at any time based on measured results and/or economic and environmental considerations. A number of cities have set, or are setting, reduction targets, a sampling of which appears in Attachment 1.

Meeting the Reduction Targets

Achieving the proposed reduction targets will require the involvement of all City departments.

What We Have Done

The City has already taken numerous steps to reduce GHG emissions from its operations, including:

- Replacing the Civic Center air chillers with high-efficiency units.
- Relamping hundreds of lighting fixtures with energy-efficient bulbs and installing lighting occupancy sensors in several buildings.
- Implementing a master lighting control project (for remote access scheduling and shut-down capabilities).
- Replacing (1) incandescent lamps with LED bulbs at all City-owned and operated traffic signals; and (2) all incandescent pedestrian signals with LED countdown signals at City, County and Caltrans traffic signals.
- Conducting a pilot test of high-efficiency streetlights on Calderon Avenue.
- Installing landfill gas-powered microturbines that produce 140 kilowatts of electricity for City buildings in Shoreline at Mountain View Park. Remaining landfill gas is sold to local businesses in the North Bayshore for electricity production (~3 megawatts), with excess energy placed on the PG&E grid for use by other customers.
- Establishing LEED Silver as the green building standard for new or renovated City facilities.

Attachment 2 provides the GHG reductions and cost savings of a sample of City projects, completed or in progress.

What We Are Planning To Do

In addition, the City is already planning or implementing various GHG-reducing actions approved in the Environmental Sustainability Action Plan (ESAP) and proposed in the Federal Energy Efficiency and Conservation Block Grant application. These actions include:

- "Greening" one City building each year, starting with the Library.
- Installing high-efficiency lighting at the Cuesta and Rengstorff Park tennis courts.
- Replacing the aging Shoreline landfill microturbines so they can continue to power the on-site facilities.
- Evaluating the feasibility of implementing one or more large, municipal solar photovoltaic (PV) projects.

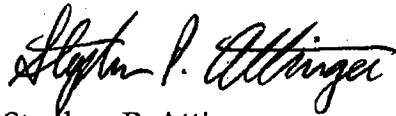
Future GHG Inventories

To track progress toward emission reduction targets, the City will conduct an inventory of its government operations GHG emissions at least every five years, the year after a target year.

NEXT STEPS

On December 8, 2009, the Council will consider the government operations GHG emissions reduction targets proposed by the Council Environmental Sustainability Committee.

Prepared by:



Stephen P. Attinger
Environmental Sustainability Coordinator

Approved by:



Michael A. Fuller
Assistant Public Works Director

Reviewed by:



Lori Topley
Solid Waste Program Manager



Nadine P. Levin
Assistant City Manager



Joan Jenkins
Transportation and Policy Manager

SPA/4/PWK
916-10-30-09M-E^

- Attachments: 1. Sample Bay Area City and County Government Operations GHG Emissions Reduction Targets
2. GHG Reductions and Cost Savings of a Sample of City Projects

Sample Bay Area Government Operations Greenhouse Gas Emissions Reduction Targets *

* Below 2005 levels unless otherwise stated

CITY TARGETS

County	City	Government Operations	Notes
Alameda	Fremont	25% by 2020	
Marin	Mill Valley	20% by 2020	<i>Below 2000 levels</i>
San Francisco	San Francisco	25% by 2010	<i>City and County of San Francisco</i>
San Mateo	San Mateo	15% by 2020	<i>Below 2006 levels</i>
Santa Clara	Los Altos Hills	40% by 2015	
	Palo Alto	5% by 2009, 15% by 2020	
Solano	Benicia	20% by 2010, 33% by 2020	<i>Below 2000 levels</i>

COUNTY TARGETS

	Government Operations	Notes
Marin	20% by 2020	<i>Below 2000 levels</i>
Santa Clara	No increase by 2010, 10% by 2015, 20% by 2020, 40% by 2030, 60% by 2040, 80% by 2050	

GHG Reductions and Cost Savings of a Sample of City Projects

Project	Cost After PG&E Incentives (Materials and/or Labor)	Estimated Annual Energy Savings (kWh)	Estimated Annual Cost Savings (\$)	Estimated Annual GHG Reductions (metric tons of CO ₂ e)
Police/Fire Administration Building — Retrofitted 1,764 light bulbs and ballasts (Completed 09/06)	\$22,096	93,345	\$14,952	20.9
Mountain View Sports Pavilion and Whisman Sports Center — Retrofitted 162 light fixtures (Completed 11/07)	\$71,956	134,817	\$10,486	30.2
Civic Center — Replaced Air Chiller (Completed 04/08)	\$143,141	191,088	\$21,000	42.8
Pioneer Park and Civic Center Plaza — Retrofitted 29 post-top lights (Completed 10/09)	\$4,400 *	12,067	\$1,810	2.7

* Does not include PG&E incentive; application underway

DRAFT EXCERPT

REGULAR MEETING - WEDNESDAY, NOVEMBER 10, 2009
ATRIUM CONFERENCE ROOM AT CITY HALL - 500 CASTRO STREET
6:30 P.M.

1. CALL TO ORDER

The meeting was called to order at 6:30 p.m. by Chair Siegel.

2. ROLL CALL

Committee Members: Ronit Bryant, Margaret Abe-Koga and Chair Jac Siegel.

City Staff Present: Cathy Lazarus, Public Works Director; Joan Jenkins, Transportation and Policy Manager; Lori Topley, Solid Waste Program Manager; Steve Attinger, Environmental Sustainability Coordinator

3. ORAL COMMUNICATIONS FROM THE PUBLIC – None

4. MINUTES APPROVAL

Minutes of the June 23, 2009 and October 7, 2009 CESC meetings were approved 2-0; Abe-Koga abstained due to not being present at the October 7 meeting.

5. NEW BUSINESS

**5.1 GOVERNMENT OPERATIONS GREENHOUSE GAS (GHG)
INVENTORY AND EMISSIONS REDUCTION TARGETS**

Staff presented results of the City's recently completed government operations greenhouse gas inventory and long-term greenhouse gas reduction targets for consideration by the committee and Council, and noted the Council approved community-wide greenhouse gas reduction targets on November 3 2009.

The City completed an inventory of its 2005 government operations emissions in conjunction with ICLEI, which showed total emissions of 18,340 metric tons of CO₂-e. The 2005 inventory will serve as a baseline year against which the City will measure its future emission reductions.

The next step to meeting AB 32 requirements is setting GHG reduction targets. The City's targets can be modified at any time based on measured results and/or economic and environmental considerations.

Staff recommends the following government operations GHG reduction targets:

- 15 percent reduction below 2005 levels by 2010.
- 20 percent reduction below 2005 levels by 2015.
- 25 percent reduction below 2005 levels by 2020.
- 80 percent reduction below 2005 levels by 2050.

Total government operations emissions have already declined approximately 12% from 2005 through 2008 due to naturally decreasing landfill emissions. Considering additional landfill emissions decreases in 2009 and 2010 and several energy efficiency projects completed between 2005 and 2010, the proposed 2010 reduction target of 15% appears easily achievable.

Achieving the proposed reduction targets will require the involvement of all departments, and the City has already taken numerous steps to reduce GHG emissions from its operations. To track progress toward emission reduction targets, the City will conduct an inventory of its government operations emissions at least every five years, the year after a target year.

Committee Comments

In response to a question about where the City can actually make reductions, and at what cost, staff explained that the estimated reduction potential of several planned projects is known, and after further analysis staff will have a good sense where the City is in relation to the 2010 reduction goal.

A committee member asked whether and when the City will develop a menu of project options with associated costs and budget. Staff explained they will develop a Climate Action Plan in 2010 for government operations, based on the ICLEI emissions data.

Regarding whether buildings other than City Hall will become green businesses, staff indicated the Senior Center has also been certified, the Municipal Operations Center will hopefully be certified this year, the

Performing Arts Center will be examined, and the Community Center in its current form will not likely qualify.

The committee asked several questions about the landfill emissions at 52%, whether they would decrease 12% every 3 years, and whether they'd ever get to 0% given the reduction target of 80% by 2050. Staff explained that emissions will continue to decrease over time, but not necessarily at that rate, and they would not likely ever reach 0%. The current landfill gas capture efficiency is 93.7%, which is very good and not likely to improve that much.

Regarding how government operations and community-wide emissions are related, staff explained there are separate GHG inventories for each, with government operations accounting for 2.4% of overall community-wide emissions.

A committee member indicated that setting reduction targets before having a more complete picture of which emissions reduction projects will be required to meet the targets is not ideal, but we shouldn't delay setting the targets. The committee member requested staff provide a synopsis of major GHG-reducing activities that have occurred since 2005 and are planned going forward, and recommended staff keep an on-going tally of emissions reduction activities and their impacts, so this information can easily be conveyed to the Council.

A committee member asked how the reduction targets were derived. Staff explained three factors were considered: (1) AB 32 requirements, (2) what targets other local cities have set, and (3) the ICLEI inventory report. Knowing that landfill emissions decreased 12% between 2005 and 2008 it seemed likely the City could reach the 15% reduction target by 2010, considering two additional years of decreasing landfill emissions and five years of energy-saving projects completed across city operations. To reach the longer term targets it will take effort on everyone's part, the City and community, but the Council can adjust the targets in the future if it wants to.

The committee discussed it will be important to look at how best to allocate funds between city operations and the community, given city government's 2.4% contribution to overall emissions.

Public Input

Julie Lovins wanted to highlight the value of doing things that provide a good example to the community through the very good work being done in City operations.

John Carpenter commented on the importance of the City demonstrating projects that are easy for the entire community to follow. For more costly efforts a joint City-community effort will be required.

Bruce Karney stated that reduction targets are just the beginning of the process. Sustainability is the big topic everyone should be discussing, including “economic” sustainability and where revenues are coming from. If the City isn’t economically sustainable it won’t have the money to put toward important sustainability efforts. He commented that landfills never stop releasing emissions, encouraged the City to study its engine idling more closely, and inquired about the City Green Team.

Dave Paradise commented on the importance of energy efficiency first, but the City should also look at ways to get solar installations on city buildings through power purchase agreements (PPA).

John Carpenter said new LED Christmas lights are extremely efficient. He added that solar panel efficiency has gone up to 40%, so now is a good time to look at more solar on city buildings.

Committee Discussion

A committee member reiterated interest in seeing staff’s “menu” of possible actions and their associated costs, and assumed solar panels on city buildings would be included.

One committee member commented although there can be a trade-off between the economics and environmental benefits, they are not mutually exclusive. He indicated concern about adopting goals without a clearly defined path to achieve them, but he thought the Council will accept them since they are goals.

Another committee member commented on the importance of setting goals and getting started. She was concerned about two of the top three biggest emissions areas, landfill and employee commuting, being largely out of the City’s control, but was comfortable taking a “wait and see” approach and revisiting the goals in the future if necessary.

One committee member asked if anyone has analyzed the amount of energy used among different employee commute options, such as driving a car, taking the train, or riding a bus, and commented that energy is being used regardless of the mode of transportation. Staff explained that if an employee

doesn't drive, those emissions are never produced, but the train and bus will run whether or not the employee rides them.

A committee member reiterated the City needs to serve as a role model for residents, to demonstrate what is possible, and should publicize what it is doing as a way of teaching the community there is a cost savings as well as a return. Another committee member agreed the City should publicize its activities as a way of leveraging their impact.

Committee member Bryant moved to recommend the City Council adopt the following government operations GHG emission reduction targets:

- 15 percent below 2005 levels by 2010.
- 20 percent below 2005 levels by 2015.
- 25 percent below 2005 levels by 2020.
- 80 percent below 2005 level by 2050.

The motion was seconded by committee member Abe-Koga. The motion passed 3-0.

Major Government Operations GHG-Reducing Projects Since 2005 GHG Inventory

Project	Completion Date	Estimated GHG Emissions Avoided (metric tons CO ₂ e)
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LIGHTING

Police/Fire Administration Building—1,764 high efficiency bulbs and ballasts	Sep-06	28
Eagle Pool—24 high efficiency light fixtures	Nov-07	20
Police/Fire Administration Building—high efficiency exit signs ¹	Dec-05	18
Civic Center—new lighting control system	Jan-09	19
Mountain View Sports Pavilion & Whisman Sports Center—162 high efficiency lamps	Nov-07	13
Bryant Street Parking Structure—high efficiency exit signs	Oct-08	5
MOC Fleet Services Building—68 high efficiency light fixtures	Nov-08	4
Civic Center—46 high efficiency, bi-level, motion-sensing stairwell light fixtures	Dec-08	3
Mountain View Sports Pavilion—high efficiency exit signs ¹	Dec-05	3
Whisman Sports Center—high efficiency exit signs ¹	Dec-05	3
Bryant Street Parking Structure—105 high efficiency light fixtures	Dec-09	3
Mountain View Public Library garage—46 high efficiency light fixtures	Nov-09	1
Pioneer Park and Civic Center Plaza—29 high efficiency post-top lights (estimate)	Oct-09	1
In the Community—High efficiency streetlights	In process	T.B.D.

HEATING AND COOLING

Civic Center—air chiller replacement	Apr-08	83
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COMPUTER SYSTEMS

Civic Center—computer network power management software	Oct-08	33
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RENEWABLE ENERGY

California/Bryant Parking Garage—90kW solar PV system	May-07	84
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WATER

North Bayshore—Recycled water system	Jun-09	T.B.D.
In the Community—Automated/remote water meter reading	On-going	T.B.D.
City Facilities—numerous conservation actions (e.g. low-flow showerheads and urinals, dual-flush toilets, motion-sensing faucets)	On-going	T.B.D.
In the Community—Automated 175 irrigation controllers, allowing remote control ¹	2005	T.B.D.
In the Community—Weekly programming of irrigation controllers based on evapotranspiration data	On-going	T.B.D.
New parks (Devonshire & Sierra Vista) and medians (Evelyn Ave. & Whisman Rd.) —Low-water/maintenance landscaping	On-going	T.B.D.

TRANSPORTATION

Fleet—Use of hybrid and other fuel-efficient vehicles	On-going	T.B.D.
Fleet—Transitioning to bio-diesel	On-going	T.B.D.

EST. TOTAL MAJOR PROJECTS GHG EMISSIONS AVOIDED (excluding landfill):	321
TOTAL 2005 GOVERNMENT OPERATIONS GHG EMISSIONS:	18,349
EST. TOTAL MAJOR PROJECTS GHG EMISSIONS AVOIDED (% of 2005 total):	1.7%

DECREASE IN LANDFILL EMISSIONS, 2006-2008 (% of 2005 total):	12.3%
EST. TOTAL GHG EMISSIONS AVOIDED, 2006-2008/09 (% of 2005 total):	14.0%
2010 GOVERNMENT OPERATIONS EMISSIONS REDUCTION TARGET:	15%

¹ Completed in late 2005, and thus energy/GHG savings began in 2006.